

Customer No.: 31561
Application No.: 10/709,924
Docket No.: 13366-US-PA

AMENDMENTS

To the Claims:

Claim 1 (currently amended) A high-voltage metal-oxide-semiconductor (HV-MOS) device, comprising:

a substrate;

a gate dielectric layer on the substrate;

a gate on the gate dielectric layer;

a channel region in the substrate under the gate dielectric layer;

two doped regions as a source and a drain in the substrate beside the gate;

a field isolation layer between the gate and the two doped regions;

a drift region in the substrate under the field isolation layer, connecting with the channel region and the at least one doped region; and

a modifying doped region in the substrate at periphery of the at least one doped region,

wherein the drift region and the modifying doped region together completely surround the doped regions.

Claim 2 (previously presented) The HV-MOS device of claim 1, wherein the modifying doped region is in the substrate at the peripheries of the two doped regions.

Claim 3 (canceled)

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Claim 4 (original) The HV-MOS device of claim 1, wherein the field isolation layer comprises a field oxide (FOX) layer.

Claim 5 (currently amended) A high-voltage metal-oxide-semiconductor (HV-MOS) device, comprising:

a substrate;

a gate dielectric layer on the substrate;

a gate on the gate dielectric layer;

a channel region in the substrate under the gate dielectric layer;

two doped regions as a source and a drain in the substrate beside the gate;

a field isolation layer between the gate and the two doped regions;

a drift region in the substrate under the field isolation layer, connecting with the channel region and the at least one doped region; and

a modifying doped region in the substrate at periphery of the at least one doped region.

~~The HV-MOS device of claim 1,~~ wherein each doped region comprises a heavily doped contact region and a lightly doped grade region under the contact region.

Claim 6 (currently amended) A high-voltage metal-oxide-semiconductor (HV-MOS) device, comprising:

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a substrate;

a gate dielectric layer on the substrate;

a gate on the gate dielectric layer;

a channel region in the substrate under the gate dielectric layer;

two doped regions as a source and a drain in the substrate beside the gate;

a field isolation layer between the gate and the two doped regions;

a drift region in the substrate under the field isolation layer, connecting with the channel region and the at least one doped region; and

a modifying doped region in the substrate at periphery of the at least one doped region.

~~The HV MOS device of claim 1,~~ wherein a doping concentration of the drift region and the modifying doped region ranges from $5 \times 10^{15}/\text{cm}^3$ to $5 \times 10^{17}/\text{cm}^3$.

Claim 7-14 (canceled)

Claim 15 (new) The HV-MOS device of claim 5, wherein the modifying doped region is in the substrate at the peripheries of the two doped regions.

Claim 16 (new) The HV-MOS device of claim 5, wherein the field isolation layer comprises a field oxide (FOX) layer.

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Claim 17 (new) The HV-MOS device of claim 6, wherein the modifying doped region is in the substrate at the peripheries of the two doped regions.

Claim 18 (new) The HV-MOS device of claim 6, wherein the field isolation layer comprises a field oxide (FOX) layer.